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Hospital Medical School), chemistry; Mr. J. H. Morgan (University College and the London School of Economics), constitutional law; Dr. W. J. R. Simpson (King's College), hygiene and public health; Mr. J. H. Thomas (University College), sculpture; and Mr. G. Wallas (London School of Economics), political science.

DISCUSSION AND CORRESPONDENCE

HEADSHIP AND ORGANIZATION OF CLINICAL DEPARTMENTS OF FIRST-CLASS MEDICAL SCHOOLS

TO THE EDITOR OF SCIENCE: In the October 30, 1914, number of SCIENCE there is a very interesting and timely article by Dr. Meltzer, of the Rockefeller Institute, on the reorganization of clinical teaching in this country, "Headship and Organization of Clinical Departments of First-class Medical Schools." The subject is a very important one and I feel sure that it will interest the many medical men who have the opportunity of reading your journal. Dr. Meltzer refers in his letter, which is written to a university president, to the report of the Council on Medical Education of the American Medical Association made to the House of Delegates of the A. M. A. in June of last year. He takes occasion to criticize in his letter several statements made in this report, and especially the statement "that the medical school very properly demands that its clinical teachers be men who are recognized as authorities in their special fields, both by the profession and the community," and he further objects to the use of the term "grotesque" as referred to a plan in which it is proposed that clinical teachers may do private practise, but that fees from such practise are to be turned into the university treasury. He also questions in advance the value of a report on the reorganization of clinical teaching that is to be made by a committee of the well-known clinical teachers to whom this subject has been referred by the Council on Medical Education.

As chairman of the Council on Medical Education I am very glad that this important subject is being discussed in the columns of such an influential journal as SCIENCE and by such an able physician and research worker

as Dr. Meltzer. I feel, however, that the readers of SCIENCE and college presidents and trustees could not form an accurate view of the position taken by the American Medical Association from Dr. Meltzer's letter alone, and without reading the portion of the report of the Council on Medical Education referring to this subject, and therefore am enclosing this special part of our report from page 15 to page 17.

In the reorganization of our medical schools one of the most pressing needs is that of placing the clinical departments on a more satisfactory basis. Little has as yet been done in this country with this problem, and the time has arrived when the medical profession and the medical schools must take up this matter vigorously and formulate a general plan of organization of our clinical departments and urge its adoption. With this in view the Council on Medical Education has appointed a strong committee of ten clinicians, who have had great experience in teaching and who are regarded as authorities in their special departments and in medical education, to study this subject and report to the conference on medical education.

The organization of a clinical department is a more complex subject than that of a department like anatomy, or physiology, where teaching and research are the functions demanded.

In clinical work the head of the department and his associates must be three things; first, great physicians in their special field; second, trained teachers; and third, research workers. The medical school very properly demands that their clinical teachers be men who are recognized as authorities in their special fields, both by the profession and by the community. In the organization of a clinical department this fact must not be lost sight of and whatever plan is adopted must make it possible for the clinical teachers to remain the great authorities in their special fields both in the eyes of the profession and of the public.

The plan adopted by the German universities has been on the whole most satisfactory. There a professor in a clinical department is in every sense a university professor just as

much as the professor of chemistry or of physics. His university work commands his time. He must allow nothing to interfere with his teaching, his clinical work in the hospital or his research, and he devotes on the average quite as much time to his university work as does his colleague in chemistry or in mathematics. In addition to this, however, he devotes some time each day to private practise by which he maintains his position before the profession and the public as a great specialist. This can be done without neglecting his university position. In fact, if he does not remain the great physician, he ceases to be of as much value either to his students or to his university. On the other hand, if he should neglect his university work because of the time he devoted to private practise, his services would be dispensed with.

This problem of clinical teaching has been taken up during the year by the General Education Board and, as a result, an interesting experiment is to be tried at Johns Hopkins and possibly at one or two other places. The General Education Board has given Johns Hopkins \$1,500,000 endowment with which to pay salaries to the departments of medicine, surgery and pediatrics. The position is taken in this experiment that the head of a clinical department should be given a very large salary and should receive no fees for private practise. It was recognized at once that the rich should not be deprived of the services of these experts, so the grotesque plan is proposed that these men may do private practise, but that fees from that practise are to be turned into the university treasury and not into their own pockets. [As will be seen by the context the word "grotesque" does not apply to the plan as a whole but is used to characterize that part of it which proposes that these clinical teachers may do private practise but are not permitted to receive any fees for these services, the understanding being that the fees are to be assessed and collected and appropriated by the university or hospital. I desire to assume the full responsibility for this particular portion of the report and to submit that the term "grotesque" is an exceedingly mild one to

characterize such an unethical and illegal scheme. That the fees for the peculiarly individual and personal service rendered by a physician or surgeon to his patient should be appropriated by any institution and not go direct to the medical man rendering such service is clearly unethical. It is equally clear that it is illegal, as the institution would have no standing whatever in court if it sought to collect for itself the fees for such service. It is interesting to note in this connection that although these propositions are perfectly clear to men who are practising medicine, they are not as self-evident to non-clinical and non-medical men who are not in a position to understand the rights and interests of the medical profession.]

The men who proposed this plan, and provided the money necessary to make the experiment, are non-medical men; they do not have the medical point of view and they do not understand the complex functions demanded of the clinical teacher.

This plan has not been well received by the clinical teachers and finds its supporters almost entirely among the laboratory men. It is difficult to understand if the teachers in a medical school are to be placed on salaries and not permitted to receive any compensation for outside work, why the clinical teacher should be given a very large salary and his colleague in anatomy or in pathology a comparatively small one. The sweating of the scientific men who have devoted their lives to teaching and research on miserable salaries is notorious. Advantage has been taken of the fact that their scientific enthusiasm would hold them to their work and they are often as underpaid, comparatively, as the workers in a sweat shop. Surely, if the medical department of a university receives large endowments for the payment of salaries, the men teaching in the laboratory sciences should receive the first consideration. Again, if a clinical department obtained large sums for salaries, why should they pay a very large salary to the head of the department who in a very limited amount of time devoted to practise could obtain for his services much more than the amount of such

salary? Would it not be better to devote the available money to paying several younger men from 25 to 35 years of age—their more productive years—to devote practically all their time to teaching and research? Fortunately for the plan, the men who are responsible for it recognize that it is an experiment and frankly advise that it be not adopted by other medical colleges until it has been tried out on Hopkins.

The fact that such a plan has been seriously proposed by laymen interested in education emphasizes the necessity of a thorough reorganization of our scheme of clinical teaching along lines to be determined and agreed on by a committee of our best clinical teachers.

I should like to add the following comment.

First, that the Council of Medical Education believes that one of the most pressing needs is that of the reorganization of our clinical departments on a more satisfactory basis.

Second, the Council of Medical Education has taken the position that this important subject of the reorganization of clinical teaching should be submitted to a committee of experts, men who are recognized as great clinical teachers and who are familiar with the problems of clinical medicine. This committee is composed of the following men: Dr. V. C. Vaughan, University of Michigan, President of the American Medical Association; Dr. Geo. Armstrong, McGill University; Dr. John Finney, Johns Hopkins University; Dr. John Clark, University of Pennsylvania; Dr. W. J. Mayo, trustee of the University of Minnesota; Dr. Geo. deSchweinitz, University of Pennsylvania; Dr. Frank Billings, Rush Medical College, University of Chicago; Dr. Harvey Cushing, Harvard University; Dr. Geo. Dock, Washington University, and Dr. Saml. Lambert, Columbia University.

The committee is at present working on this problem. The Council on Medical Education does not know as yet what the findings of this committee will be. We believe, however, that the report of this committee will be of greater value than would the report on this particular subject of a committee of university presidents, professors in the science departments of

universities, professors of the laboratory branches such as embryology, chemistry or physiology in a medical school, or men who are devoting their lives to the problems of medical research, but who are not in touch with clinical medicine. Would it not be well for university presidents, university trustees and medical faculties who contemplate reorganizing their clinical departments to await the findings of this committee representing the American Medical Association? The subject was discussed February 16, 1915, at the annual conference on medical education held in Chicago and the final report will be made to the house of delegates at the June meeting of the American Medical Association.

ARTHUR DEAN BEVAN

SOIL NITRATES

TO THE EDITOR OF SCIENCE: In the reviews of an article¹ by Mr. Wright and myself appearing in a monthly bulletin of the International Institute of Agriculture² and the *Chemical Abstracts* of the American Chemical Society,³ the point of view supported by our paper is not fully recognized. One review refers to the malnutrition of citrus trees as resulting from the toxic effects of superabundant nitrates, and the other refers especially to the production of malnutrition from the denitrification of soil nitrates. We presented the data of our experimental studies in California in some detail in order to draw attention to what we believe to be an important phenomenon, namely, that probably identical symptoms of malnutrition result either from superabundant nitrates which we regard as one phase of the so-called "alkali" poisoning and by nitrogen starvation which may re-

¹ "Relation of Bacterial Transformations of Soil Nitrogen to Nutrition of Citrus Plants," Kellerman, K. F., and Wright, R. C. (Bureau of Plant Industry, U. S. Dept. of Agr.) in *Journal of Agricultural Research*, Vol. II, No. 2, p. 101-13, Washington, D. C., May, 1914.

² *Monthly Bulletin of Agricultural Intelligence and Plant Diseases*, Year V., No. 9, p. 1166, September, 1914.

³ *Chemical Abstracts*, Vol. 8, No. 15, p. 2769, August 10, 1914.